FIG.1

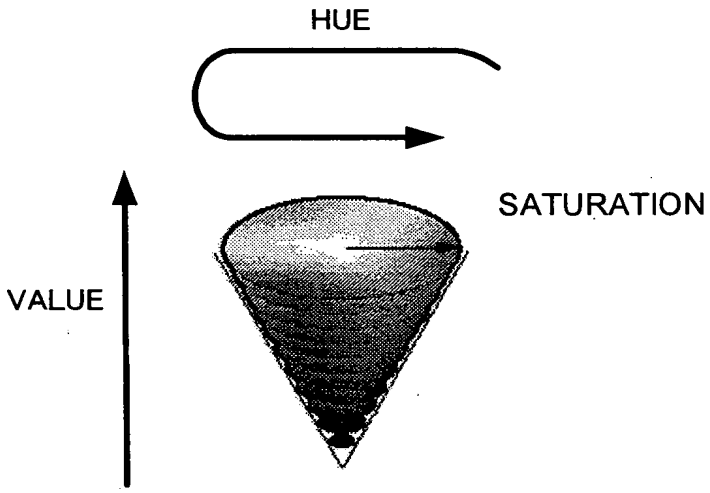


FIG.2

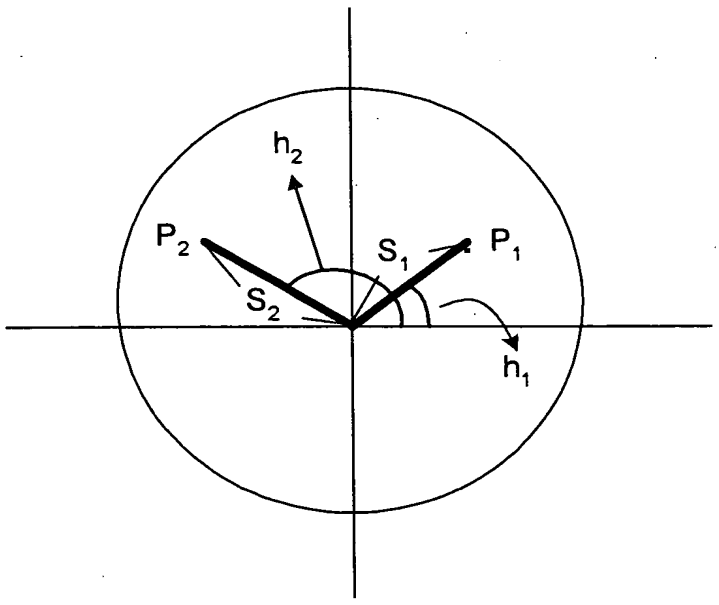


FIG.3

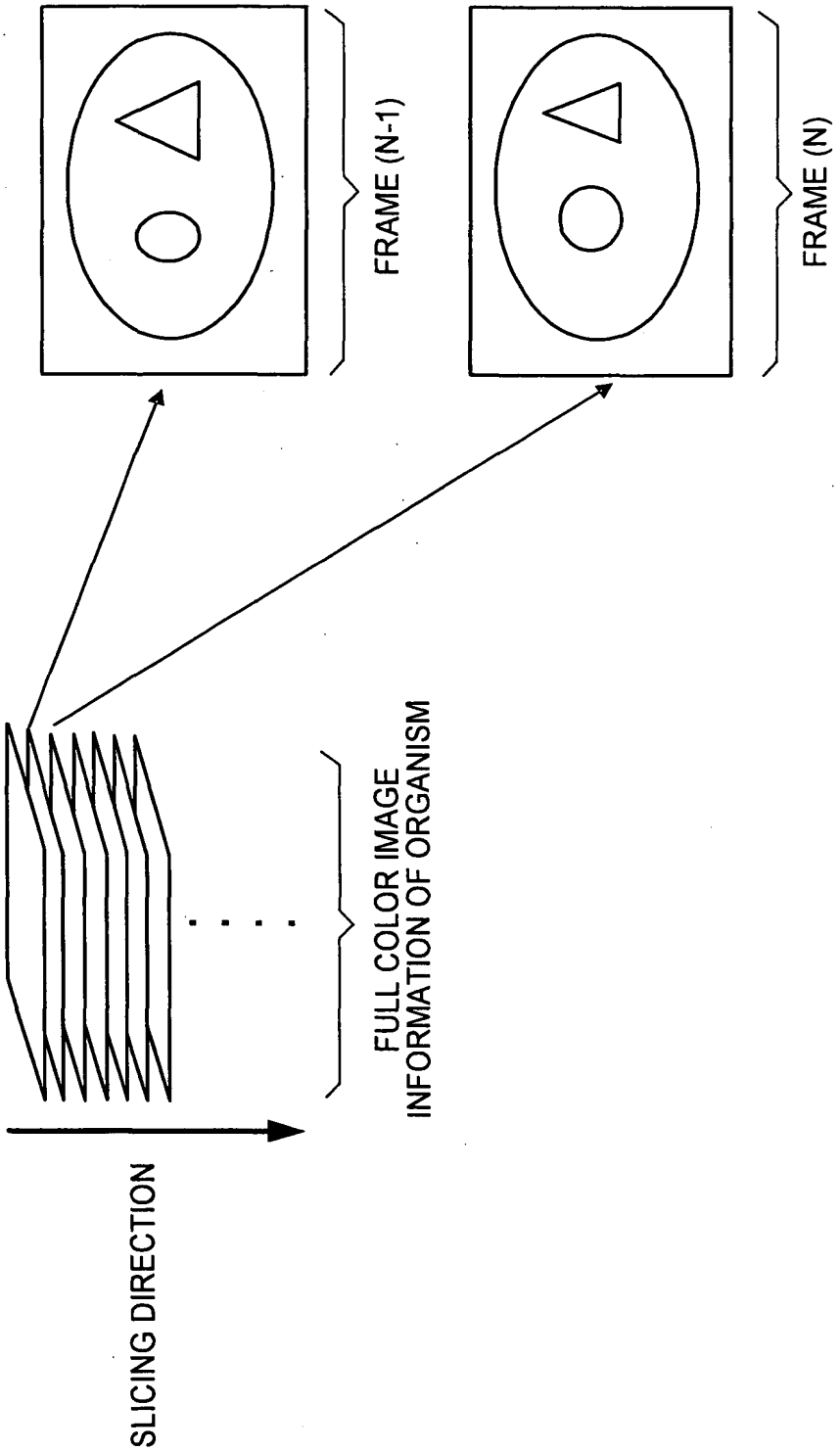

FRAME (N-1)
FRAME (N)
FULL COLOR IMAGE INFORMATION OF ORGANISM
SLICING DIRECTION

FIG.4A

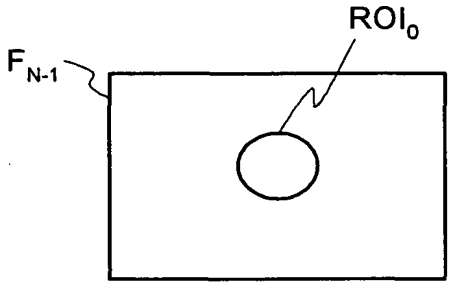


FIG.4B

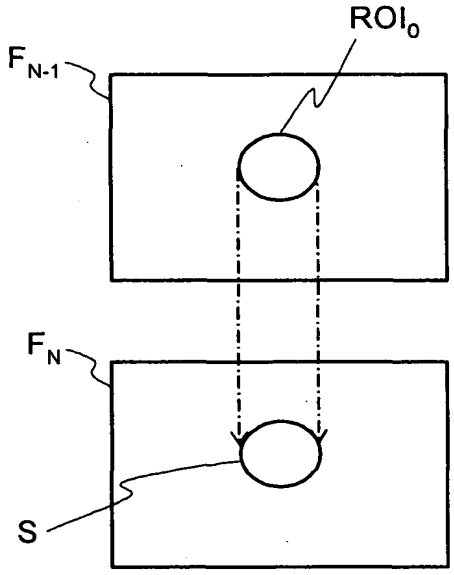


FIG.4C

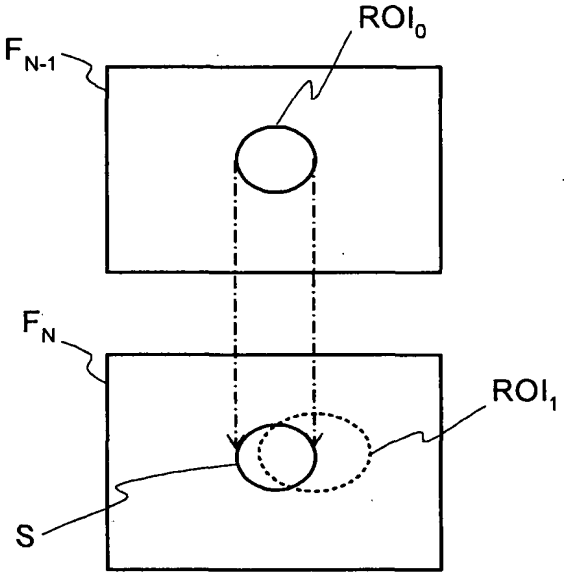


FIG.4D

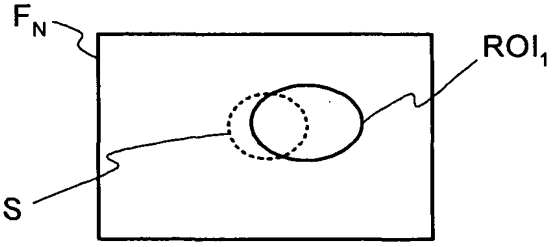


FIG.5

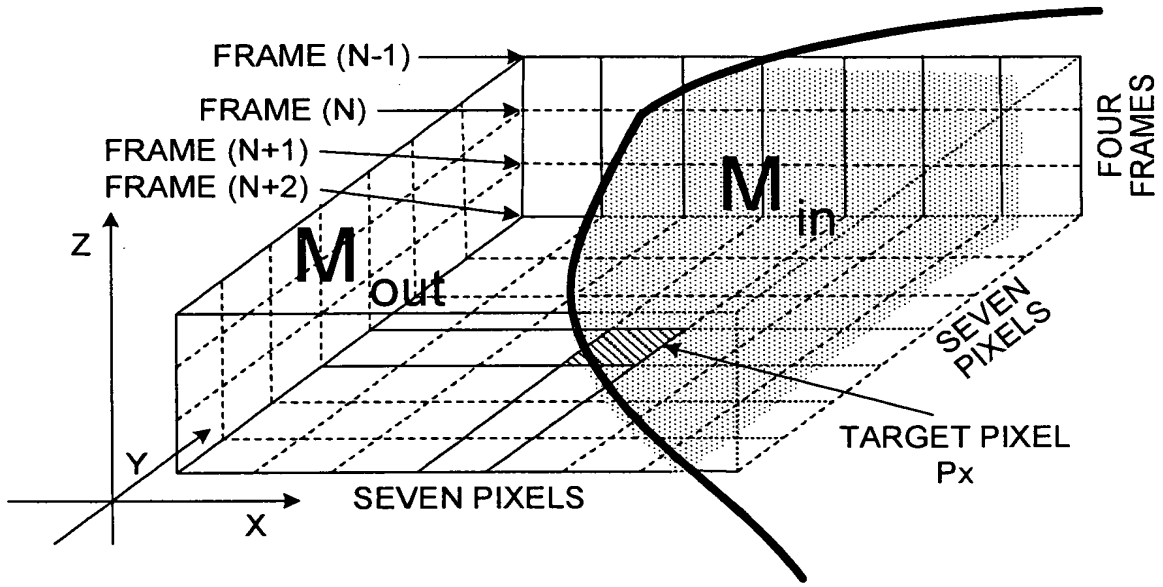

FRAME (N-1)
FRAME (N)
FRAME (N+1)
FRAME (N+2)
FOUR FRAMES
Z
Y
X
M in
M out
SEVEN PIXELS
SEVEN PIXELS
TARGET PIXEL
Px

FIG.6

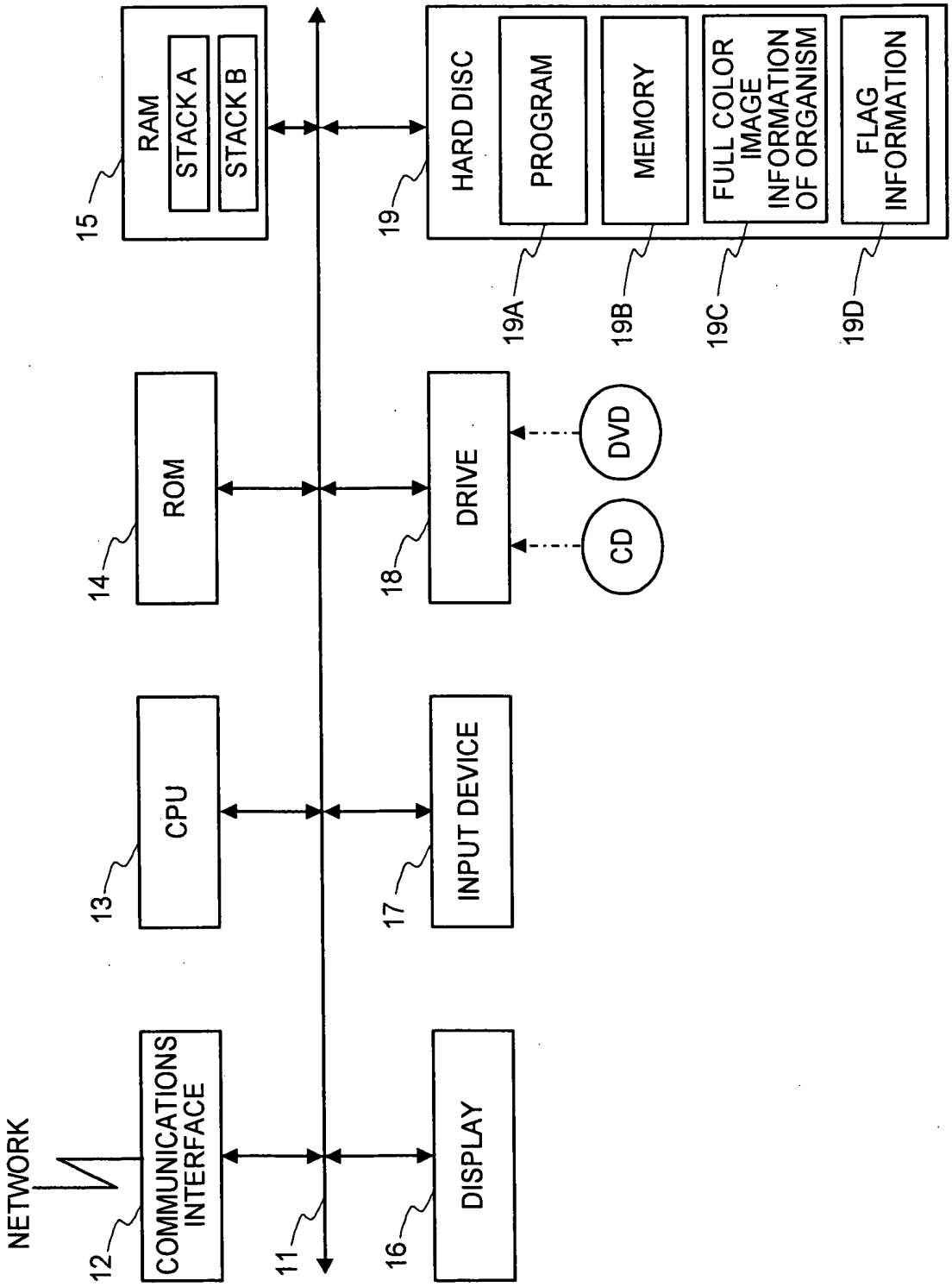

NETWORK
12
COMMUNICATIONS INTERFACE
11
16
DISPLAY
13
CPU
17
INPUT DEVICE
14
ROM
18
DRIVE
DVD
CD
15
RAM
STACK A
STACK B
19
HARD DISC
PROGRAM
MEMORY
FULL COLOR IMAGE INFORMATION OF ORGANISM
FLAG INFORMATION
19A
19B
19C
19D

FIG.7

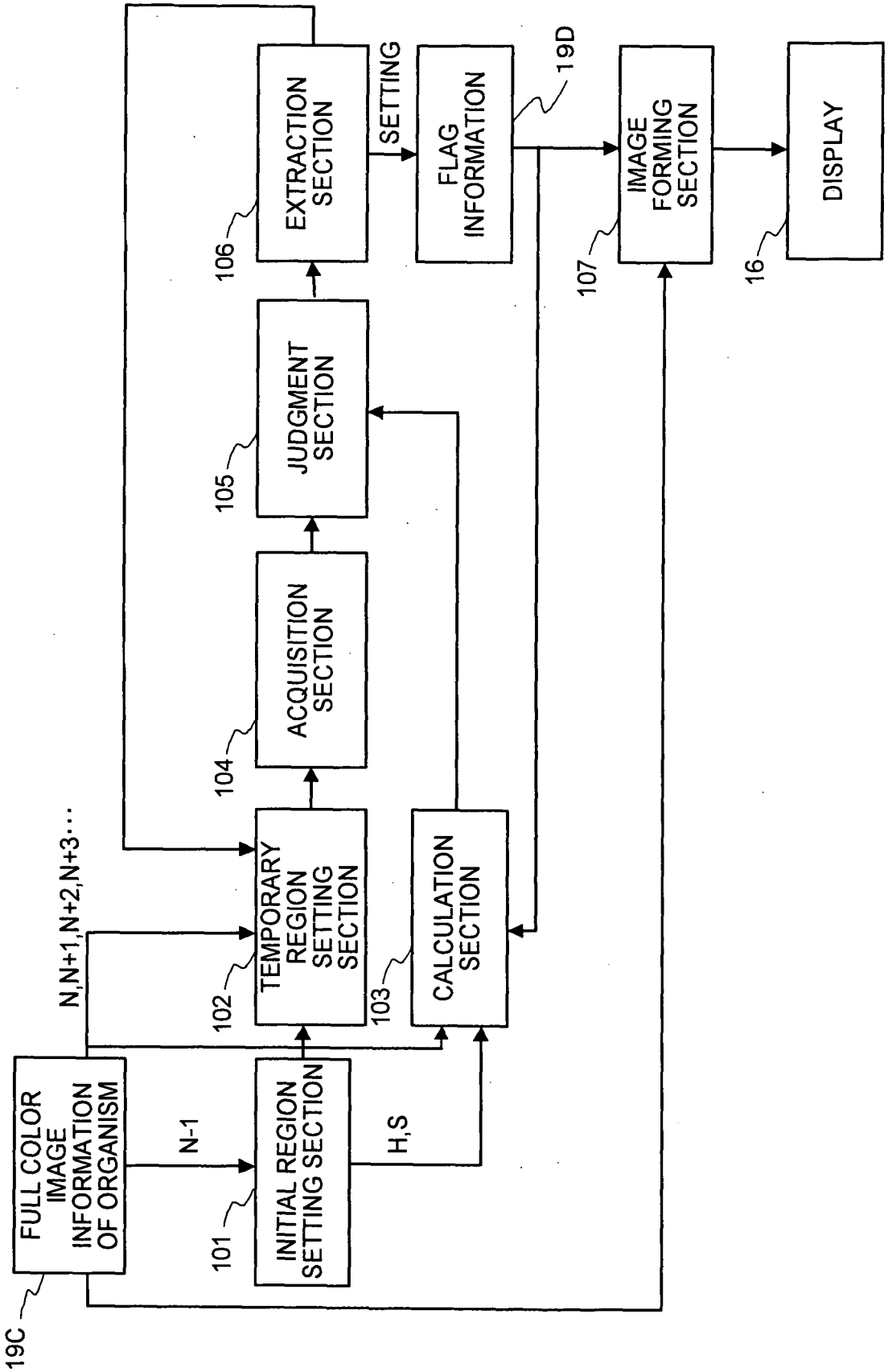

FULL COLOR IMAGE INFORMATION OF ORGANISM
19C
N-1
INITIAL REGION SETTING SECTION
101
H,S
N,N+1,N+2,N+3···
TEMPORARY REGION SETTING SECTION
102
CALCULATION SECTION
103
ACQUISITION SECTION
104
JUDGMENT SECTION
105
EXTRACTION SECTION
106
SETTING
FLAG INFORMATION
19D
IMAGE FORMING SECTION
107
DISPLAY
16

FIG.8C

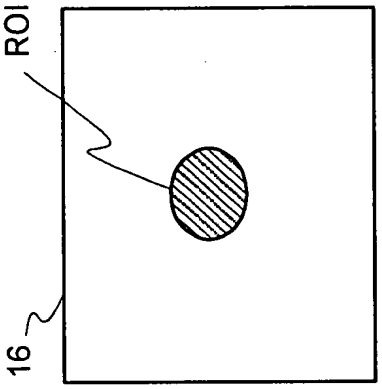


FIG.8F

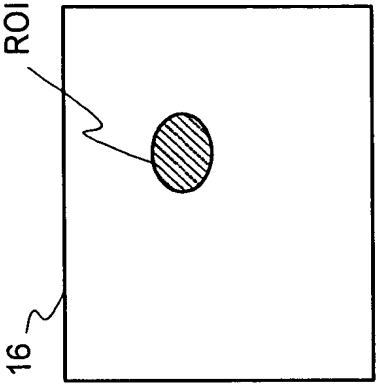


FIG.8B

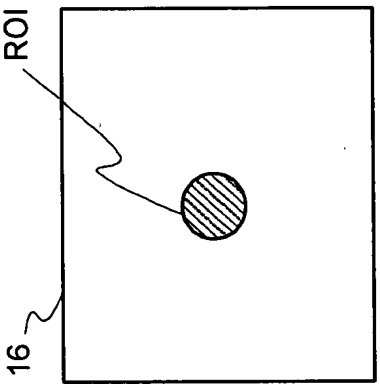


FIG.8E

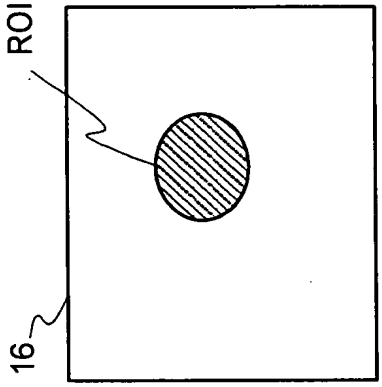


FIG.8A

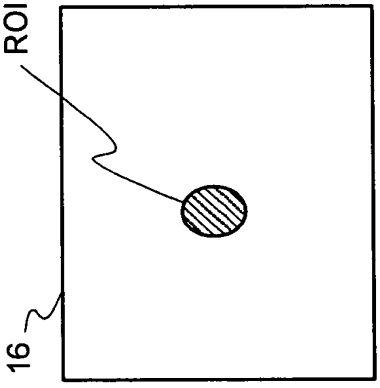


FIG.8D

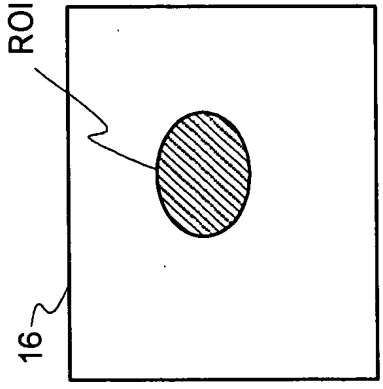


FIG.9

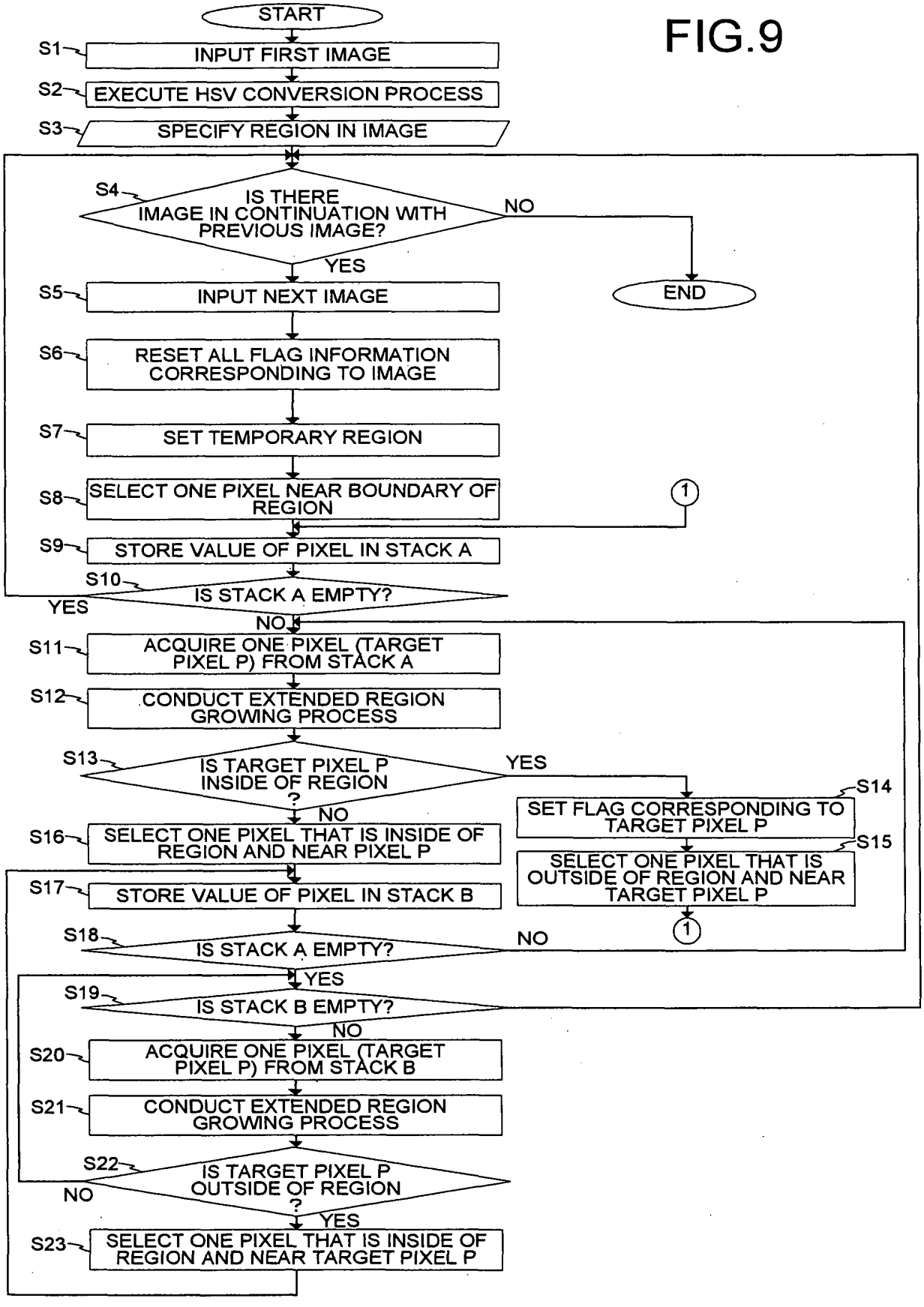

START
S1
INPUT FIRST IMAGE
S2
EXECUTE HSV CONVERSION PROCESS
S3
SPECIFY REGION IN IMAGE
S4
IS THERE IMAGE IN CONTINUATION WITH PREVIOUS IMAGE?
NO
YES
END
S5
INPUT NEXT IMAGE
S6
RESET ALL FLAG INFORMATION CORRESPONDING TO IMAGE
S7
SET TEMPORARY REGION
S8
SELECT ONE PIXEL NEAR BOUNDARY OF REGION
1
S9
STORE VALUE OF PIXEL IN STACK A
S10
IS STACK A EMPTY?
YES
NO
S11
ACQUIRE ONE PIXEL (TARGET PIXEL P) FROM STACK A
S12
CONDUCT EXTENDED REGION GROWING PROCESS
S13
IS TARGET PIXEL P INSIDE OF REGION ?
YES
NO
S14
SET FLAG CORRESPONDING TO TARGET PIXEL P
S15
SELECT ONE PIXEL THAT IS OUTSIDE OF REGION AND NEAR TARGET PIXEL P
1
S16
SELECT ONE PIXEL THAT IS INSIDE OF REGION AND NEAR PIXEL P
S17
STORE VALUE OF PIXEL IN STACK B
S18
IS STACK A EMPTY?
NO
YES
S19
IS STACK B EMPTY?
NO
S20
ACQUIRE ONE PIXEL (TARGET PIXEL P) FROM STACK B
S21
CONDUCT EXTENDED REGION GROWING PROCESS
S22
IS TARGET PIXEL P OUTSIDE OF REGION ?
NO
YES
S23
SELECT ONE PIXEL THAT IS INSIDE OF REGION AND NEAR TARGET PIXEL P

FIG.10

19D

FRAME	COORDINATES	FLAG
⋮	⋮	⋮
100	(X_1, Y_1, Z_1)	1
	(X_2, Y_2, Z_2)	0
	⋮	⋮
101	(X_1, Y_1, Z_1)	0
	(X_2, Y_2, Z_2)	1
	⋮	⋮
⋮	⋮	⋮

FIG.11A

ORIGINAL IMAGE

ORIGINAL IMAGE: MOUSE
ROI: STOMACH OF MOUSE
SIZE: 320 × 240 (pixels/slice)
NO. OF IMAGES: 150 (212 μm/pix)
Z AXIS RESOLUTION: 30 μm

FIG.11B

3-DIMENSIONAL MODEL

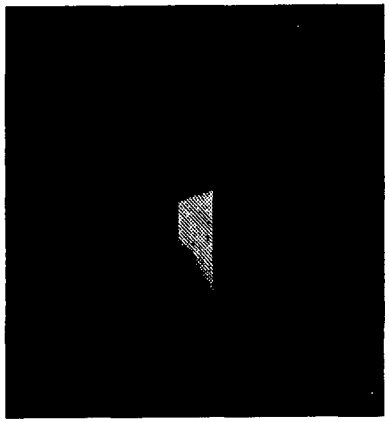
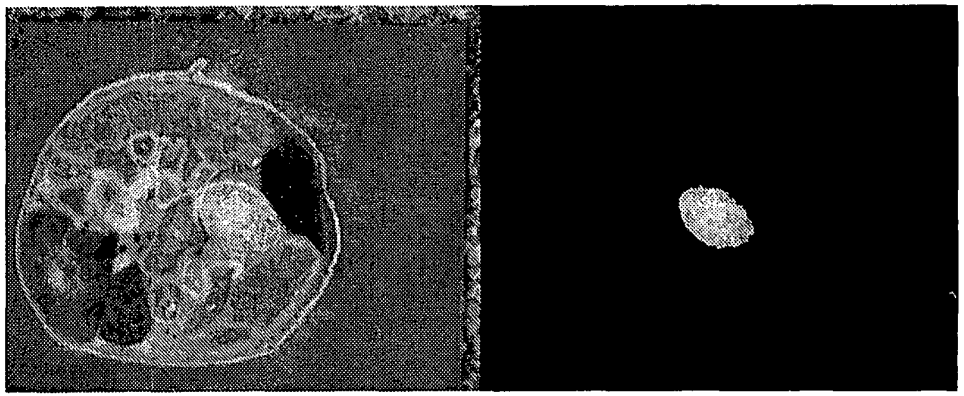


FIG.11C

ORIGINAL IMAGE

RESULT



Title: METHOD OF EXTRACTION OF REGION OF INTEREST, IMAGE PROCESSING APPARATUS, AND COMPUTER PRODUCT
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FIG.12

FRAME No.	INSIDE OF REGION			OUTSIDE OF REGION		
	EXTRACTION AUTOMATIC / MANUAL	E	ACCURACY (%)	EXTRACTION AUTOMATIC / MANUAL	E	ACCURACY (%)
1st	1451/1493	42	97.19	75263/75307	44	99.94
5th	1606/1672	66	96.05	75101/75128	27	99.96
10th	1663/1726	63	96.35	75015/75074	52	99.92
30th	1975/2093	118	94.36	74628/74707	79	99.89
50th	2254/2329	75	96.78	74372/74471	99	99.87
100th	3397/3586	189	94.73	73029/73214	185	99.75
130th	3871/4083	212	94.81	72289/72717	428	99.41
140th	3561/3789	228	93.98	71942/73011	1069	98.54
150th	3372/4347	975	77.57	71828/72453	625	99.14

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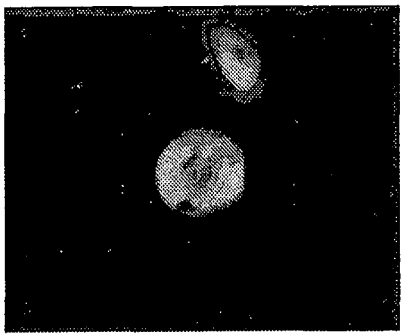
FIG.13A

ORIGINAL IMAGE



ORIGINAL IMAGE: HUMAN EYEBALL
ROI: WHOLE OF A HUMAN EYEBALL
SIZE: 320 × 240 (pixels/slice)
NO. OF IMAGES: 840 (212 μm/pix)
Z AXIS RESOLUTION: 10 μm

FIG.13B

3-DIMENSIONAL MODEL

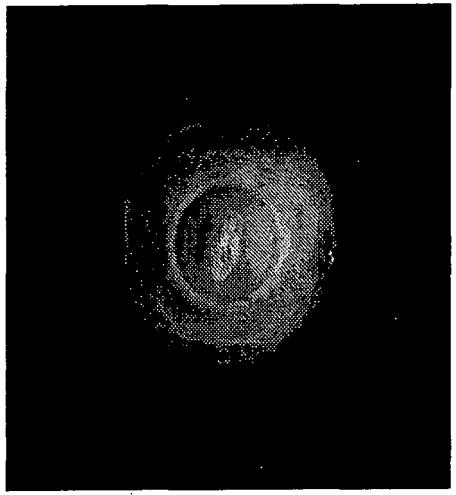


FIG.13C

RESULT

Title: METHOD OF EXTRACTION OF REGION OF INTEREST, IMAGE PROCESSING APPARATUS, AND COMPUTER PRODUCT
Inventor(s): Hideo YOKOTA et al.
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